Accessible Transportation Technologies Research Initiative (ATTRI)

APPLICATIONS WORKSHOP

SCENARIOS

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WASHINGTON, DC

Accessible Transportation
Technologies Research Initiative (ATTRI)
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Scenario 1: Functional Physical Ability

Description. Barbara is 35 years old with physical mobility needs. After a car accident, she has limited use of her hands and legs and sometimes uses a wheelchair. She also uses a service animal to help with balance when she stands up and to pull her chair when she gets tired. She recently got a job with a bank and moved back in with her parents until she can make other arrangements. Barbara got used to traveling by public transit while she was living in Chicago, and she has no intention of asking her mother or father to drive her everywhere she wants to go. She wants her new employer to see her as an independent young woman and she wants the freedom of mobility enjoyed by her peers.

Her parents live in a small town in a predominantly rural county in the northern U.S. that has a demand/responsive, public transit system which takes people upon request to any location within the county and to make connections to a fixed-route public transportation system available in the nearest large city. She's never used her home county public transportation before, but she needs to get into the city to reach her job at a regional bank. Her primary concerns about this are whether she will have trouble boarding the bus given the lack of completed sidewalks in town and whether she will be able to negotiate pathways to and from the bus—particularly in winter when the plows leave piles of snow. How can technology enhance Barbara's functional physical ability?

Broader Description

Functional physical ability is a large category that covers any physical movement of the body and can include use of hands, arms, legs, feet, neck and back. It can be affected by congenital conditions such as arthritis or cerebral palsy, or cause by an illness or injury. It can occur at any age, and most people experience some level of restriction to physical ability as a part of the aging process. As with any disability, adaptive skills are learned over time, meaning that people who have been living with the disability longer will have more functional ability than those for whom the disability is new.

For purposes of our work today, consider how the top technologies selected on day one might help to offset functional physical needs such as:

- Balance stepping into and out of transit vehicles, particularly with the use of canes or walkers
- Navigating gaps between the curb or platform to the vehicle
- Handling the payment of fare
- Knowing the best and most accessible pathways
- Having sufficient time to cross the street during the pedestrian walk cycle

Scenario 2: Functional Cognitive Ability

Description. Andy is a 16 year old student with a cognitive disability. He lives with his parents and attends public high school. After school he participates in a youth transition program at the Arc. He is aware that his friends from school use public transportation to go to school and to get to places on the weekend such as the mall and to the movies. He no longer wants to ride the "special bus" that picks him up from school to go to the Arc. Andy says he wants to use public transportation like everyone else.

The Arc provides travel training to students in the transition program and will work with Andy to gain the skills he needs to use public transportation. How can technology enhance the functional ability for Andy to get around on his own?

Broader Description

Cognition is the set of all mental abilities and processes related to knowledge, attention, memory, judgment and evaluation, reasoning and computation, problem-solving and decision-making, comprehension and production of language. Many things can impact a person's functional cognitive ability resulting in differing levels of functional need. Causes can be genetic such as Down's syndrome or dementia, or external such as traumatic brain injury, and can occur at any age. As with any disability, adaptive skills are learned over time, meaning that people who have been living with the disability longer will have more functional ability than those for whom the disability is new.

Unlike other disabilities, people with cognitive needs may not be able to transfer skills learned from one situation to another.

For purposes of our work today, consider how the top technologies selected on day one might help to offset functional cognitive needs such as:

- Short- or long-term memory loss
- Problem-solving unexpected situations
- Following a sequence of steps to complete a trip
- Staying focused
- Determining when interaction with strangers is inappropriate or dangerous
- Identifying safe resources for help or assistance
- Keeping his caregivers or family members informed of his whereabouts

Scenario 3: Functional Hearing Ability

Description. Cathy is a grandmother who has recently experienced significant hearing loss. She lives with her husband in a suburban gated community and provides periodic childcare for two of her grandchildren. While Cathy can drive, her hearing loss is profound and she is uncomfortable driving, especially with the children in the car. She is afraid that due to her hearing loss, she would not be able to hear emergency vehicles or communicate her needs if she is an emergency situation with the children in car.

Through a little research, Cathy has discovered a number of communications options such as a speech to text or text to speech, that may allow her to take a shuttle that runs between her neighborhood and several shopping centers, a parks and recreation van that will take people to the zoo and other park facilities provided they make public announcements, including bus stops in text on a display/smart device. She is concerned about how to manage these options to result in the trips she wants to take and how she will communicate with the different call centers and drivers. How can technology increase Cathy's functional ability?

Broader Description

People can experience a wide range of functional hearing ability from a gradual hearing loss over a period of time that can go mostly unnoticed except in certain situations, to profound deafness. It can occur at any age and can either be congenital or caused by injury or illness. Aids can assist with some types of hearing loss, though even these may not work well in crowded, noisy places. Lip-reading and the exchange of written notes are sometimes helpful in communication, but not everyone will display the same level of ability to use these techniques. As with any disability, adaptive skills are learned over time, meaning that people who have been living with the disability longer will have more functional ability than those for whom the disability is new.

For purposes of our work today, consider how the top technologies selected on day one might help to offset functional hearing needs such as:

- Knowing how to select the best transportation option to use
- Communicating with drivers or other agency personnel to gain information about the trip
- Knowing when emergency alarms are activated and understanding verbal instructions given to passengers
- Traveling with two young children in public places

Scenario 4: Functional Visual Ability

Description. Don is a 50 year old Navy veteran who is blind. He lives in a small city in Florida with his wife and teenage son and public transportation is available. He uses volunteer drivers from the Disabled American Veterans program to get to medical appointments or sometimes his older sister, who works part-time, can give him a lift during the day, but Don would like more options for attending sporting events, and he is worried about how he will get to work when he returns to employment. His wife is very willing to help, but Don doesn't want to put a strain on his marriage by using her as his personal taxicab. The V.A. provided him with training on how to use the white cane to travel independently.

Don's travel skills as a person who is blind are very new and he is concerned about getting lost, not judging traffic correctly when it is time to cross the street and knowing which bus to take. He is also worried about how he will find his way inside a sports arena and doesn't want to have to depend on his friends or his son to always get him to the right place. How can technology meet the functional visual needs Don is experiencing?

Broader Description

There is a broad spectrum of functional visual ability from needing glasses to read to total blindness. Vision that can be corrected can fall within the typical visual range experienced by most people and is not generally considered to be significant. However, not all people with functional visual needs are blind. Many have some vision that can be used to read large print, see obstacles, or distinguish between light and shadow and may not choose to use a white cane or a guide dog. As with any disability, adaptive skills are learned over time, meaning that people who have been living with the disability longer will have more functional ability than those for whom the disability is new.

For purposes of our work today, consider how the top technologies selected on day one might help to offset functional visual needs such as:

- Navigating pathways in unfamiliar areas
- Navigating in noisy places such as train stations or along busy roads and highways
- Knowing when the right bus is approaching, especially for flag stop service
- Navigating indoor facilities
- Locating and working around unexpected obstacles such as temporary construction sites or maintenance of water and sewers

Notes

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